Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-49 Canceled.

50. (Previously Presented) A method of coding a moving picture for performing hierarchical coding, comprising the steps of:

performing, based on first motion information, temporal filtering on an input picture signal and thereafter spatially dividing the input picture signal into layers to obtain a first signal;

reducing said input picture signal with a resolution converting filter and thereafter performing, based on second motion information, temporal filtering on the input picture signal at a reduced resolution to obtain a second signal; and

coding said first signal and said second signal.

51. (Previously Presented) A method of coding a moving picture for performing hierarchical coding, comprising the steps of:

performing a temporal-spatial hierarchical dividing process to divide an input picture signal into a first signal which is obtained by performing, based on first motion information, temporal filtering on the input picture signal and thereafter spatially dividing the input picture signal into layers and a second signal which is obtained by performing, based on second motion information, temporal filtering at a reduced resolution on a reduced input picture signal which is produced when said input picture signal is reduced by a resolution converting filter; and

recursively performing said temporal-spatial hierarchical dividing process on said reduced input picture signal and thereafter coding signals in the respective layers.

52. (Previously Presented) A method of coding a moving picture for performing hierarchical coding, comprising the steps of:

performing, based on first motion information, a motion compensation predicting process on an input picture signal and thereafter spatially dividing the input picture signal into layers to obtain a first signal;

reducing said input picture signal with a resolution converting filter and thereafter performing, based on second motion information, a motion compensation predicting process on the input picture signal at a reduced resolution to obtain a second signal; and

coding said first signal and said second signal.

53. (Previously Presented) A method of coding a moving picture for performing hierarchical coding, comprising the steps of:

performing a temporal-spatial hierarchical dividing process to divide an input picture signal into a first signal which is obtained by performing, based on first motion information, a motion compensation predicting process on the input picture signal and thereafter spatially dividing the input picture signal into layers and a second signal which is obtained by performing, based on second motion information, a motion compensation predicting process at a reduced resolution on a reduced input picture signal which is produced when said input picture signal is reduced by a resolution converting filter; and

recursively performing said temporal-spatial hierarchical dividing process on said reduced input picture signal and thereafter coding signals in the respective layers.

54. (Previously Presented) The method of coding a moving picture according to any one of claims 50 to 53, wherein said resolution covering filter is the same as a filter for generating a higher-layer in a hierarchical dividing process.

55. (Previously Presented) A method of coding a moving picture, comprising the step of performing, a plurality of times, a three-dimensional subband dividing process for temporally dividing an input picture signal into subbands and spatially dividing the input picture signal into subbands,

said three-dimensional subband dividing process comprising:

a motion information calculating step of calculating motion information representative of a motion between frames of the input picture signal and between bands of an intraband

signal which is a band signal of one of low-frequency subbands produced by dividing the input picture signal into subbands;

a temporal subband dividing step of temporally dividing the input picture signal and the intraband signal into subbands after the input picture signal and the intraband signal are motion-compensated according to the motion information obtained in the motion information calculating step, thereby generating a temporal low-frequency subband signal and a temporal high-frequency subband signal;

a temporal high-frequency subband signal spatially dividing step of spatially dividing temporal high-frequency subband signal into subbands, thereby generating a temporal high-frequency, spatial low-frequency subband and a temporal high-frequency, spatial high-frequency subband;

a temporal low-frequency subband signal spatially dividing step of spatially dividing temporal low-frequency subband signal into subbands, thereby generating a temporal low-frequency, spatial low-frequency subband and a temporal low-frequency, spatial high-frequency subband; and

a band signal spatially dividing step of spatially dividing the intraband signal into subbands, thereby generating a low-frequency intrasubband and a high-frequency intrasubband;

wherein the temporal subband dividing step, the temporal high-frequency subband signal spatially dividing step, the temporal low-frequency subband signal spatially dividing step, and the band signal spatially dividing step are performed on the input picture signal;

the low-frequency intrasubband obtained after the band signal spatially dividing step is used as the intraband signal, and the temporal subband dividing step, the temporal high-frequency subband signal spatially dividing step, the temporal low-frequency subband signal spatially dividing step, and the band signal spatially dividing step are recursively repeated, and each time these steps are repeated, the temporal low-frequency, spatial low-frequency subband and the temporal high-frequency, spatial low-frequency subband are replaced respectively with the temporal low-frequency subband signal and the temporal high-frequency subband signal that are obtained in the temporal subband dividing step performed immediately thereafter.

56. (Previously Presented) The method of coding a moving picture according to claim 55, wherein when two intraband signals in the same frequency bands are divided into subbands in said temporal subband dividing step, one of the temporal high-frequency subband signal and the temporal low-frequency subband signal which are obtained is associated with a past band signal, and other of the temporal high-frequency subband signal and the temporal low-frequency subband signal which are obtained is associated with a future band signal.

57. (Previously Presented) A method of coding a moving picture, comprising the step of performing, a plurality of times, a three-dimensional subband dividing process for temporally dividing an input picture signal into subbands and spatially dividing the input picture signal into subbands,

said three-dimensional subband dividing process comprising:

a motion information calculating step of calculating motion information representative of a motion between frames of the input picture signal and between bands of an intraband signal which is a band signal of one of low-frequency subbands produced by dividing the input picture signal into subbands;

a motion compensation predicting step of obtaining a prediction error signal by performing a motion compensation predicting process on the input picture signal and the intraband signal according to the motion information obtained in the motion information calculating step;

a prediction error signal spatially dividing step of spatially dividing the prediction error signal into subbands, thereby generating a low-frequency prediction error subband and a high-frequency prediction error subband; and

a band signal spatially dividing step of spatially dividing the intraband signal into subbands, thereby generating a low-frequency intrasubband and a high-frequency intrasubband;

wherein the motion information calculating step, the motion compensation predicting step, the prediction error signal spatially dividing step, and the band signal spatially dividing step are performed on the input picture signal;

the low-frequency intrasubband obtained after the band signal spatially dividing step is used as the intraband signal, and the motion information calculating step, the motion

compensation predicting step, the prediction error signal spatially dividing step, and the band signal spatially dividing step are recursively repeated, and each time these steps are repeated, the low-frequency prediction error subband obtained by the prediction error signal spatially dividing step is replaced with the prediction error signal obtained by the motion compensation predicting coding step performed immediately thereafter.

58. (Previously Presented) The method of coding a moving picture according to claim 57, wherein either one of past and future subband signals with respect to two intraband signals which are in the same frequency band is used as a reference signal in said motion compensation predicting step.

59. (Previously Presented) The method of coding a moving picture according to claim 57, wherein band signals, except a single band signal to be coded, of a plurality of intraband signals which are in the same frequency band is used as reference signals in said motion compensation predicting step, and a weighted average of the reference signals is used in a motion compensating process.

60. (Previously Presented) The method of coding a moving picture according to claim 8, wherein when intraband signals which are in the same frequency band are motion-compensated, band signals used as reference signals are changed for one pixel or a plurality of pixels in said motion compensation predicting step.

61. (Previously Presented) A method of decoding a moving picture to decode hierarchical coded data, comprising the steps of:

decoding a higher-layer temporally filtered signal produced by first temporal filtering base on first motion information, a temporally filtered lower-layer signal produced when a temporally filtered signal produced from second temporal filtering based on second motion information is spatially divided into layers, and said first motion information and said second motion information;

generating a higher-layer decoded signal from said higher-layer temporally filtered signal and said first motion information;

generating a temporally filtered higher-layer signal from said higher-layer decoded signal and said second motion information;

combining said temporally filtered higher-layer signal and said temporally filtered lower-layer signal, thereby generating said temporally filtered signal; and

generating a decoded picture signal from said temporally filtered signal and said second motion information.

62. (Previously Presented) A method of decoding a moving picture to decode hierarchical coded data, comprising the steps of:

decoding a higher-layer prediction error signal produced by a first motion compensation predicting process based on first motion information, a prediction error lower-layer signal produced when a prediction error signal produced from a second motion compensation predicting process based on second motion information is spatially divided into layers, and said first motion information and said second motion information;

generating a higher-layer decoded signal from said higher-layer temporally filtered signal and said first motion information;

generating a prediction error higher-layer signal from said higher-layer decoded signal and said second motion information;

combining said prediction error higher-layer signal and said prediction error lower-layer signal, thereby generating said prediction error signal; and

generating a decoded picture signal from said prediction error signal and said second motion information.

63. (Previously Presented) A method of decoding a moving picture to decode hierarchical coded data, comprising the steps of:

decoding a higher-layer temporally filtered signal which is produced by first temporal filtering based on first motion information, a temporally filtered lower-layer signal produced when a temporally filtered signal which is produced by second temporal filtering based on second motion information is spatially divided into layers, and said first motion information and said second motion information;

generating a higher-layer decoded signal from said higher-layer temporally filtered signal and said first motion information;

generating a temporally filtered higher-layer signal from said higher-layer decoded signal and said second motion information;

temporal filtering combining to combine said temporally filtered higher-layer signal and said temporally filtered lower-layer signal to generate a temporally filtered signal; and

producing a decoded picture by regarding said temporally filtered signal as the higher-layer temporally filtered signal, decoding the motion information and the temporally filtered lower-layer signal in a layer lower than a layer of interest, recursively performing the temporally filtering combining step, and thereafter performing temporally inverse-filtering.

64. (Previously Presented) A method of decoding a moving picture to decode hierarchical coded data, comprising the steps of:

decoding a higher-layer prediction error signal which is a signal produced by a first motion compensation predicting process based on first motion information, a prediction error lower-layer signal produced when a prediction error signal which is produced by a second motion compensation predicting process based on second motion information is spatially divided into layers, and said first motion information and said second motion information;

generating a higher-layer decoded signal from said higher-layer prediction error signal and said first motion information;

generating a prediction error higher-layer signal from said higher-layer decoded signal and said second motion information;

a prediction error combining to combine said prediction error higher-layer signal and said prediction error lower-layer signal to generate said prediction error signal; and

producing a decoded picture by regarding said prediction error signal as the higher-layer prediction error signal, decoding the motion information and the prediction error lower-layer signal in a layer lower than a layer of interest, recursively performing the prediction error combining step, and thereafter performing an inverse process of the motion compensation prediction.

65. (Previously Presented) A method of decoding a moving picture, comprising the step of generating a decoded picture signal according to a three-dimensional subband combining process for spatially combining subband signals for each frame and thereafter

performing temporal subband combining process for temporally combining a temporal low-frequency subband and a temporal high-frequency subband,

said three-dimensional subband combining process comprising:

a temporal high-frequency subband combining step of generating a combined temporal high-frequency subband signal by referring to a temporal high-frequency, spatial low-frequency signal which is a spatial low-frequency signal of a temporal high-frequency subband, and a temporal high-frequency, spatial high-frequency subband which is a subband of a high-frequency band adjacent to the low-frequency signal, and additionally both or either one of a temporal low-frequency, spatial low-frequency subband which is in the same frequency band as the temporal high-frequency, spatial low-frequency signal, and a temporal low-frequency, spatial high-frequency subband which is a subband of a high-frequency band adjacent to the subband signal, and motion information representing a motion compensating process corresponding to said temporal high-frequency subband;

a temporal low-frequency subband spatially combining step of combining the temporal low-frequency, spatial low-frequency subband and the temporal low-frequency, spatial high-frequency subband; and

a temporally combining step of performing a motion compensation predicting process on the temporal low-frequency subband and the temporal high-frequency subband, and thereafter performing temporal subband combination;

wherein the temporal high-frequency subband combining step is performed on the temporal high-frequency, spatial low-frequency signal which is in the lowest frequency band of the temporal high-frequency subband, and the temporal low-frequency subband spatially combining step is performed on the temporal low-frequency, spatial low-frequency subband which is in the lowest frequency band of the temporal low-frequency subband; and

the band signal obtained by the temporal high-frequency subband combining step is regarded as a new temporal high-frequency, spatial low-frequency signal, and the band signal obtained by the temporal low-frequency subband spatially combining step is regarded as a new temporal low-frequency, spatial low-frequency subband, the temporal high-frequency subband spatially combining step and the temporal low-frequency subband spatially combining step are recursively repeated, producing the temporal low-frequency subband and the temporal high-frequency subband.

66. (Previously Presented) The method of decoding a moving picture according to claim 65, wherein said temporal high-frequency subband combining step comprises:

a temporal high-frequency subband estimating step of estimating a temporal high-frequency, spatial low-frequency subband using the temporal low-frequency, spatial low-frequency subband which is in the same frequency band as said temporal high-frequency, spatial low-frequency signal and the motion information; and

a temporal high-frequency subband spatially combining step of performing subband combination of the estimated temporal high-frequency, spatial low-frequency subband obtained by said temporal high-frequency subband estimating step and the temporal high-frequency, spatial high-frequency subband which is a subband of a high-frequency band adjacent to said subband signal.

67. (Previously Presented) The method of decoding a moving picture according to claim 66, wherein in said temporal high-frequency subband estimating step, the temporal subband division between a low-frequency subband of a signal, due to only a low-frequency intrasubband, of prediction signals generated in the motion compensation, using the motion information representing the motion compensation corresponding to the temporal high-frequency subband, and a low-frequency subband of a present frame signal in the motion compensation is used as an estimated value of the temporal high-frequency, spatial low-frequency subband.

68. (Previously Presented) The method of decoding a moving picture according to claim 66, wherein said temporal high-frequency subband estimating step comprises the steps of:

reducing a temporal high-frequency component in proportion to an interband resolution ratio between the prediction error signal and a prediction error low-frequency signal, using the motion information representing the motion compensation corresponding to the temporal high-frequency subband; and

after the motion compensating process is performed on the reduced temporal high-frequency component, temporally dividing the temporal high-frequency component into subbands, and using an obtained value as the estimated value of the temporal high-frequency, spatial low-frequency subband.

69. (Previously Presented) The method of decoding a moving picture according to claim 65, wherein said temporal high-frequency subband combining step comprises:

a temporal high-frequency subband estimating step of estimating a temporal high-frequency, spatial low-frequency subband using said temporal low-frequency, spatial low-frequency subband, said temporal low-frequency, spatial high-frequency subband, and said motion information; and

a temporal high-frequency subband spatially combining step of performing subband combination of the estimated temporal high-frequency, spatial low-frequency subband obtained by said temporal high-frequency subband estimating step and the temporal high-frequency, spatial high-frequency subband which is a subband of a high-frequency band adjacent to said subband signal.

70. (Previously Presented) The method of decoding a moving picture according to any one of claims 65 to 69, wherein in said temporal subband combining step, either one of past and future band signals with respect to two band signals which are in the same frequency band is associated with said temporal high-frequency subband signal, the other of the past and future band signals is associated with said temporal low-frequency subband signal, and the temporal subband combination is performed.

71. (Previously Presented) The method of decoding a moving picture according to any one of claims 65 to 69, wherein said temporal subband combining step includes a process of producing a weighted average of band signals other than said band signal in said motion compensating process.

72. (Previously Presented) The method of decoding a moving picture according to any one of claims 65 to 69, wherein in said temporal subband combining step, paired band signals to be temporally combined to subbands are changed for each band signal or each plurality of pixels.

73. (Previously Presented) A method of decoding a moving picture to generate a decoded picture signal, comprising the step of performing a three-dimensional subband combining process for perform subband combination of spatially combining subband signals

for each frame and thereafter performing a motion compensating process on a combined intraband signal and a prediction error signal,

said three-dimensional subband combining process comprising:

a prediction error signal combining step of generating a combined subband prediction error signal by referring to a prediction error low-frequency signal which is a low-frequency signal of the prediction error signal, and a high-frequency prediction error subband which is in a subband of a high-frequency band adjacent to the low-frequency signal, and additionally both or either one of a low-frequency intrasubband which is in the same frequency band as the prediction error low-frequency signal, and a high-frequency intrasubband which is a subband of a high-frequency band adjacent to the low-frequency intrasubband, and motion information representing a motion compensating process corresponding to said prediction error signal;

an intraband signal spatially combining step of combining the low-frequency intrasubband and the high-frequency intrasubband; and

a motion compensation decoding step of performing a motion compensation predicting process on an intraband signal to add the combined prediction error signal thereto, thereby producing a decoded picture signal;

wherein the prediction error signal combining step is performed on the prediction error low-frequency signal which is in the lowest frequency band of the prediction error signal;

the intraband signal spatially combining step is performed on the low-frequency intrasubband which is in the lowest frequency band of the intraband signal; and

the band signal obtained by the prediction error signal combining step is regarded as a new prediction error low-frequency signal, the band signal obtained by the intraband signal spatially combining step is regarded as a new low-frequency intrasubband, said prediction error signal combining step and said intraband signal spatially combining step are recursively repeated, producing the intraband signal and the prediction error signal.

74. (Previously Presented) The method of decoding a moving picture according to claim 73, wherein said prediction error signal combining step comprises:

a prediction error subband estimating step of estimating a low-frequency prediction error subband which is a subband of a low-frequency band of said prediction error signal, using the prediction error low-frequency signal, the low-frequency intrasubband, and the motion information; and

a prediction error signal spatially combining step of performing subband combination of the estimated prediction error low-frequency subband obtained by said prediction error subband estimating step and the high-frequency prediction error subband which is a subband of a high-frequency band adjacent to said subband signal.

75. (Previously Presented) The method of decoding a moving picture according to claim 74, wherein said prediction error subband estimating step comprises the step of:

using the difference between a low-frequency subband of a signal, due to only a low-frequency intrasubband, of prediction signals generated in the motion compensation, using the motion information representing the motion compensation corresponding to the prediction error signal, and a low-frequency subband of a present frame signal in the motion compensation, as an estimated value of the low-frequency prediction error subband.

76. (Previously Presented) The method of decoding a moving picture according to claim 74, wherein in said prediction error subband estimating step, a result of the motion compensating process performed while being reduced in proportion to an interband resolution ratio between said prediction error signal and said prediction error low-frequency signal, using the motion information representing the motion compensation corresponding to the prediction error signal, is used as an estimated value of the low-frequency prediction error subband.

77. (Previously Presented) The method of decoding a moving picture according to claim 73, wherein said prediction error signal combining step comprises:

a prediction error subband estimating step of estimating a low-frequency prediction error subband which is a subband of a low-frequency band of said prediction error signal, using the prediction error low-frequency signal, the low-frequency intrasubband, the high-frequency intrasubband, and the motion information; and

a prediction error signal spatially combining step of performing subband combination of the estimated prediction error low-frequency subband obtained by said prediction error subband estimating step and the high-frequency prediction error subband which is a subband of a high-frequency band adjacent to said subband signal.

78. (Previously Presented) The method of decoding a moving picture according to any one of claims 73 to 77, wherein either one of past and future band signals with respect to two band signals which are in the same frequency band is used as a reference signal in said motion compensation decoding step.

79. (Previously Presented) The method of decoding a moving picture according to any one of claims 73 to 77, wherein in said motion compensation decoding step, the motion compensating process for a plurality of band signals which are in the same frequency band uses a weighted average of a plurality of reference signals.

80. (Previously Presented) The method of decoding a moving picture according to any one of claims 73 to 77, wherein said motion compensation decoding step comprises the step of changing band signals used as reference signals for each pixel or each plurality of pixels when the motion compensating process is performed on band signals which are in the same frequency band.

81. (Previously Presented) An apparatus for coding a moving picture for performing hierarchical coding, comprising:

temporally filtered lower-layer signal coding means for coding a temporally filtered lower-layer signal obtained when temporally filtering is performed, based on first motion information, on an input picture signal and thereafter the input picture signal is spatially divided into layers; and

higher-layer temporally filtered signal coding means for coding a higher-layer temporally filtered signal obtained when said input picture signal is reduced with a resolution converting filter and thereafter temporally filtering is performed, based on second motion information, on the input picture signal at a reduced resolution.

82. (Previously Presented) An apparatus for coding a moving picture for performing hierarchical coding, comprising:

prediction error lower-layer signal coding means for coding a prediction error lower-layer signal obtained when a motion compensating process is performed, based on a first motion information, on an input picture signal and thereafter the input picture signal is spatially divided into layers; and

higher-layer prediction error signal coding means for coding a higher-layer prediction error signal obtained when said input picture signal is reduced with a resolution converting filter and thereafter a motion compensating process is performed, based on second motion information, on the input picture signal at a reduced resolution.

83. (Previously Presented) An apparatus for coding a moving picture for performing hierarchical coding, comprising:

temporally filtered lower-layer signal generating means for generating a temporally filtered lower-layer signal by performing, based on first motion information, temporally filtering on an input picture signal and thereafter the input picture signal is spatially divided into layers; and

higher-layer temporally filtered signal generating means for generating a higher-layer temporally filtered signal by performing, based on second motion information, temporally filtering at a reduced resolution on a reduced input picture signal which is produced when said input picture signal is reduced by a resolution converting filter;

wherein said temporally filtered lower-layer signal and said higher-layer temporally filtered signal are recursively generated for said reduced input picture signal, and thereafter the respective layer signals are coded.

84. (Previously Presented) An apparatus for coding a moving picture for performing hierarchical coding, comprising:

prediction error lower-layer signal generating means for generating a prediction error lower-layer signal by performing, base on first motion information, motion compensation prediction on an input picture signal and thereafter spatially dividing the input picture signal into layers; and

higher-layer prediction error signal generating means for generating a higher-layer prediction error signal by performing, based on second motion information, motion compensation prediction at a reduced resolution on a reduced input picture signal which is produced when said input picture signal is reduced by a resolution converting filter;

wherein said prediction error lower-layer signal and said higher-layer prediction error signal are recursively generated for said reduced input picture signal, and thereafter the respective layer signals are coded.

85. (Previously Presented) An apparatus for coding a moving picture by performing, a plurality of times, a three-dimensional subband dividing process for temporally dividing an input picture signal into subbands and spatially dividing the input picture signal into subbands, comprising:

motion information calculating means for calculating motion information representative of a motion between frames of the input picture signal and between bands of an intraband signal which is a band signal of one of low-frequency subbands produced by dividing the input picture signal into subbands;

temporal subband dividing mean for temporally dividing the input picture signal and the intraband signal into subbands after the input picture signal and the intraband signal are motion-compensated according to the motion information obtained by the motion information calculating means, thereby generating a temporal low-frequency subband signal and a temporal high-frequency subband signal;

temporal high-frequency subband signal spatially dividing means for spatially dividing temporal high-frequency subband signal into subbands, thereby generating a temporal high-frequency, spatial low-frequency subband and a temporal high-frequency, spatial high-frequency subband;

temporal low-frequency subband signal spatially dividing means for spatially dividing temporal low-frequency subband signal into subbands, thereby generating a temporal low-frequency, spatial low-frequency subband and a temporal low-frequency, spatial high-frequency subband; and

band signal spatially dividing means for spatially dividing the intraband signal into subbands, thereby generating a low-frequency intrasubband and a high-frequency intrasubband;

wherein said input picture signal is processed by said temporal subband dividing means, said temporal high-frequency subband signal spatially dividing means, said temporal low-frequency subband signal spatially dividing means, and said band signal spatially dividing means;

the low-frequency intrasubband obtained by said band signal spatially dividing means is used as the intraband signal, and the processings of said temporal subband dividing means, said temporal high-frequency subband signal spatially dividing means, said temporal low-frequency subband signal spatially dividing means, and said band signal spatially dividing means are recursively repeated, and each time these processings are repeated, the temporal low-frequency, spatial low-frequency subband and the temporal high-frequency, spatial low-frequency subband are replaced respectively with the temporal low-frequency subband signal and the temporal high-frequency subband signal that are obtained by said temporal subband dividing means immediately thereafter.

86. (Previously Presented) An apparatus for coding a moving picture by performing, a plurality of times, a three-dimensional subband dividing process for performing a motion compensation predicting process on an input picture signal and spatially dividing the input picture signal into subbands, comprising:

motion information calculating means for calculating motion information representative of a motion between frames of the input picture signal and between bands of an intraband signal which is a band signal of one of low-frequency subbands produced by dividing the input picture signal into subbands;

motion compensation predicting means for obtaining a prediction error signal by performing a motion compensation predicting process on the input picture signal and the intraband signal according to the motion information obtained by said motion information calculating means;

prediction error signal spatially dividing means for spatially dividing the prediction error signal into subbands, thereby generating a low-frequency prediction error subband and a high-frequency prediction error subband; and

band signal spatially dividing means for spatially dividing the intraband signal into subbands, thereby generating a low-frequency intrasubband and a high-frequency intrasubband;

wherein said input picture signal is processed by said the motion information calculating means, said motion compensation predicting means, said prediction error signal spatially dividing means, and said band signal spatially dividing means, the low-frequency intrasubband obtained by said band signal spatially dividing means is used as the intraband signal, and the processings of said motion information calculating means, said motion compensation predicting means, said prediction error signal spatially dividing means, and said band signal spatially dividing means are recursively repeated, and each time these processings are repeated, the low-frequency prediction error subband obtained by said prediction error signal spatially dividing means is replaced with the prediction error signal obtained by said motion compensation predicting means immediately thereafter.

87. (Previously Presented) An apparatus for decoding a moving picture by decoding hierarchical coded data, comprising:

hierarchical code decoding means for decoding a higher-layer temporally filtered signal which is produced by temporal filtering based on first motion information, a temporally filtered lower-layer signal produced when a temporally filtered signal which is produced by temporal filtering based on second motion information is spatially divided into layers, and said first motion information and said second motion information;

temporally filtered higher-layer signal generating means for generating a higher-layer decoded signal from said higher-layer temporally filtered signal and first motion information, and generating a temporally filtered higher-layer signal from said higher-layer decoded signal and said temporal filtering information; and

temporally filtered signal combining means for combining said temporally filtered higher-layer signal and said temporally filtered lower-layer signal, and thereafter performing inverse transform of said second temporal filtering.

88. (Previously Presented) An apparatus for decoding a moving picture by decoding hierarchical coded data, comprising:

hierarchical code decoding means for decoding a higher-layer prediction error signal which is a signal produced by a first motion compensation process based on first motion information, a prediction error lower-layer signal produced when a prediction error signal which is produced by second motion compensation prediction based on second motion information is spatially divided into layers, and motion information representing said second motion compensation predicting process;

prediction error higher-layer signal generating means for generating a higher-layer decoded signal from said higher-layer prediction error signal and said first motion information, and generating a prediction error higher-layer signal from said higher-layer decoded signal and said second motion information; and

motion compensation combining means for combining said prediction error higher-layer signal and said prediction error lower-layer signal, and thereafter performing a combining process based on the second motion compensation.

89. (Previously Presented) An apparatus for decoding a moving picture to obtain a decoded picture by combining layers of hierarchical coded data for each frame and thereafter temporally inverse-filtering the data, comprising:

hierarchical code decoding means for decoding a higher-layer temporally filtered signal which is produced by first temporal filtering based on first motion information, a temporally filtered lower-layer signal produced when a temporally filtered signal which is produced by second temporal filtering based on second motion information is spatially divided into layers, and said first motion information and second motion information;

temporally filtered higher-layer signal generating means for generating a higher-layer decoded signal from said higher-layer temporally filtered signal and said first motion information, and generating a temporally filtered higher-layer signal from said higher-layer decoded signal and said second motion information; and

temporally filtered signal combining means for combining said temporally filtered higher-layer signal and said temporally filtered lower-layer signal to generate a combined temporally filtered signal;

wherein said combined temporally filtered signal is regarded as the higher-layer temporally filtered signal, the processing of said hierarchical code decoding means for decoding motion information and a temporally filtered lower-layer signal in a layer lower than a layer of interest, the processing of said temporally filtered higher-layer signal generating means, and the processing of said temporally filtered signal combining means are recursively performed, and thereafter a temporally inverse-filtering is performed to obtained the decoded picture.

90. (Previously Presented) An apparatus for decoding a moving picture to obtain a decoded picture by combining layers of hierarchical coded data for each frame and thereafter performing a motion compensation combining process, comprising:

hierarchical code decoding means for decoding a higher-layer prediction error signal which is a signal produced by first motion compensation prediction based on first motion information, a prediction error lower-layer signal produced when a prediction error signal which is produced by second motion compensation prediction based on second motion information is spatially divided into layers, and said first motion information and said second motion information;

prediction error higher-layer signal generating means for generating a higher-layer decoded signal from said higher-layer prediction error signal and said first motion information, and generating a prediction error higher-layer signal from said higher-layer decoded signal and said second motion information; and

prediction error signal combining means for combining said prediction error higher-layer signal and said prediction error lower-layer signal to generate a combined prediction error signal;

wherein said combined prediction error signal is regarded as said higher-layer prediction error signal, the processing of said hierarchical code decoding means for decoding prediction error information and the prediction error lower-layer signal in a layer lower than a layer of interest, the processing of said prediction error higher-layer signal generating means, and the processing of said prediction error signal combining means are recursively performed, and thereafter a motion compensation combining process is performed to obtain the decoded picture.

91. (Previously Presented) An apparatus for decoding a moving picture to generate a decoded picture signal according to a three-dimensional subband combining process for performing spatial subband combination of subband signals for each frame and thereafter performing temporal subband combination of a temporal low-frequency subband and a temporal high-frequency subband, comprising:

temporal high-frequency subband combining means for generating a combined temporal high-frequency subband signal by referring to a temporal high-frequency, spatial low-frequency signal which is a signal of a spatial low-frequency band of a temporal high-frequency subband, and a temporal high-frequency, spatial high-frequency subband which is a subband of a high-frequency band adjacent to the low-frequency signal, and additionally both or either one of a temporal low-frequency, spatial low-frequency subband which is in the same frequency band as the temporal high-frequency, spatial low-frequency signal, and a temporal low-frequency, spatial high-frequency subband which is a subband of a high-frequency band adjacent to the subband signal, and motion information representing a motion compensating process corresponding to said temporal high-frequency subband;

temporal low-frequency subband spatially combining means for combining the temporal low-frequency, spatial low-frequency subband and the temporal low-frequency, spatial high-frequency subband; and

temporally combining means for performing temporal subband combination after the temporal low-frequency subband and the temporal high-frequency subband are processed for a motion compensation predicting process;

wherein the temporal high-frequency, spatial low-frequency signal which is in the lowest frequency band of the temporal high-frequency subband is processed by said temporal high-frequency subband combining means;

the temporal low-frequency, spatial low-frequency subband which is in the lowest frequency band of the temporal low-frequency subband is processed by the temporal low-frequency subband spatially combining means;

a band signal obtained by said temporal high-frequency subband combining means is regarded as a new temporal high-frequency, spatial low-frequency signal, a band signal obtained by said temporal low-frequency subband spatially combining means is regarded as a new temporal low-frequency, spatial low-frequency subband, the processings of said temporal

high-frequency subband spatially combining means and said temporal low-frequency subband spatially combining means are recursively repeated, producing the temporal low-frequency subband and the temporal high-frequency subband.

92. (Previously Presented) An apparatus for decoding a moving picture to generate a decoded picture signal according to a three-dimensional subband combining process for performing spatial subband combination of subband signals for each frame and thereafter performing a motion compensating process on a combined intraband signal and a prediction error signal, comprising:

prediction error signal combining means for generating a combined subband prediction error signal by referring to a prediction error low-frequency signal which is a signal of a low-frequency band of the prediction error signal, and a high-frequency prediction error subband which is a subband of a high-frequency band adjacent to the low-frequency signal, and additionally both or either one of a low-frequency intrasubband which is in the same frequency band as the prediction error low-frequency signal, and a high-frequency intrasubband which is a subband of a high-frequency band adjacent to the low-frequency intrasubband, and motion information representing a motion compensating process corresponding to said prediction error signal;

intraband signal spatially combining means for combining the low-frequency intrasubband and the high-frequency intrasubband; and

motion compensation decoding means for performing a motion compensation predicting process on an intraband signal to add the combined prediction error signal thereto, thereby producing the decoded picture signal;

wherein the prediction error low-frequency signal which is in the lowest frequency band of the prediction error signal is processed by said prediction error signal combining means;

the low-frequency intrasubband which is in the lowest frequency band of the intraband signal is processed by said intraband signal spatially combining means;

the band signal obtained by the prediction error signal combining step is regarded as a new prediction error low-frequency signal, the band signal obtained by the intraband signal spatially combining step is regarded as a new low-frequency intrasubband, the processings of

said prediction error signal combining means and said intraband signal spatially combining means are recursively repeated, producing the intraband signal and the prediction error signal.

93. (Previously Presented) A program for enabling a computer to perform hierarchical coding on a moving picture, said program controlling said computer to perform:

a process of performing, based on first motion information, temporal filtering on an input picture signal and thereafter spatially dividing the input picture signal into layers to obtain a first signal;

a process of reducing said input picture signal with a resolution converting filter and thereafter performing, base on second motion information, temporal filtering on the input picture signal at a reduced resolution to obtain a second signal; and

a process of coding said first signal and said second signal.

94. (Previously Presented) A program for enabling a computer to perform hierarchical coding on a moving picture, said program controlling said computer to perform:

a process of performing a temporal-spatial hierarchical dividing process to divide an input picture signal into a first signal which is obtained by performing, based on first motion information, temporal filtering on the input picture signal and thereafter spatially dividing the input picture signal into layers and a second signal which is obtained by performing, based on second motion information, temporal filtering at a reduced resolution on a reduced input picture signal which is produced when said input picture signal is reduced by a resolution converting filter; and

a process of recursively performing said temporal-spatial hierarchical dividing process on said reduced input picture signal and thereafter coding signals in the respective layers.

95. (Previously Presented) A program for enabling a computer to decode hierarchical coded moving picture data, said program controlling said computer to perform:

a process of performing, based on first motion information, a motion compensation predicting process on an input picture signal and thereafter spatially dividing the input picture signal into layers to obtain a first signal;

a process of reducing said input picture signal with a resolution converting filter and thereafter performing, based on second motion information, a motion compensation

predicting process on the input picture signal at a reduced resolution to obtain a second signal; and

a process of coding said first signal and said second signal.

96. (Previously Presented) A program for enabling a computer to decode hierarchical coded moving picture data, said program controlling said computer to perform:

a process of decoding a higher-layer temporally filtered signal which is produced by first temporal filtering based on first motion information, a temporally filtered lower-layer signal produced when a temporally filtered signal which is produced by second temporal filtering based on second motion information is spatially divided into layers, and first motion information and said second motion information;

a process of generating a higher-order decoded signal from said higher-layer temporally filtered signal and said first motion information;

a process of generating a temporally filtered higher-layer signal from said higher-layer decoded signal and said second motion information;

a temporally filtering combining process to combine said temporally filtered higher-layer signal and said temporally filtered lower-layer signal to generate said temporally filtered signal; and

a process of producing a decoded picture by regarding said temporally filtered signal as the higher-layer temporally filtered signal, decoding the motion information and the temporally filtered lower-layer signal in a layer lower than a layer of interest, recursively performing the temporally filtering combining step, and thereafter performing a temporally inverse-filtering.

97. (Previously Presented) A program for enabling a computer to decode hierarchical coded moving picture data, said program controlling said computer to perform:

a process of decoding a higher-layer prediction error signal which is a signal produced by a first motion compensation predicting process based on first motion information, a prediction error lower-layer signal produced when a prediction error signal which is produced by a second motion compensation predicting process based on second motion information is spatially divided into layers, and said first motion information and said second motion information;

a process of generating a higher-order decoded signal from said higher-layer prediction error signal and said first motion signal;

a process of generating a prediction error higher-layer signal from said higher-layer decoded signal and said second motion information;

a prediction error combining process to combine said prediction error higher-layer signal and said prediction error lower-layer signal to generate said prediction error signal; and

a process of producing a decoded picture by regarding said prediction error signal as the higher-layer prediction error signal, decoding the motion information and the prediction error lower-layer signal in a layer lower than a layer of interest, recursively performing the prediction error combining step, and thereafter performing a inverse process of the motion compensation prediction.

98. (Previously Presented) A program for enabling a computer to decode hierarchical coded moving picture data, said program controlling said computer to perform:

a process of performing a temporal-spatial hierarchical dividing process to divide an input picture signal into a first signal which is obtained by performing, based on first motion information, a motion compensation predicting process on the input picture signal and thereafter spatially dividing the input picture signal into layers and a second signal which is obtained by performing, based on second motion information, a motion compensation predicting process at a reduced resolution on a reduced input picture signal which is produced when said input picture signal is reduced by a resolution converting filter; and

a process of recursively performing said temporal-spatial hierarchical dividing process on said reduced input picture signal and thereafter coding signals in the respective layers.